

Running Heading: IS THERE A NEED FOR A FIRE HAZARD SURVEY PROGRAM, HOW
WILL THAT PROGRAM BE USED AND IMPLEMENTED?

Implementing a Fire Hazard Survey program
in the City of Miramar (Fl).

September 2011

Bill Huff

Miramar Fire-Rescue, Miramar, Florida

Certification Statement

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas expressions or writings of another.

Signed: _____

Abstract

Prior to this research, the City of Miramar Fire-Rescue department did not perform pre-incident planning/fire hazard surveys. Established in 1955 in southern Broward County Florida, the City of Miramar was originally established as a retirement community for northeasterners. For decades the City of Miramar remained a “bedroom community”, that is until the real estate and business development boom of the late 1990’s and early to mid 2000’s. At that point the city of Miramar became one of the fastest growing communities in the United States (Vasquez, Teproff 2011). Nearly doubling its population from 2000 to 2010, the City of Miramar was no longer the typical bedroom community. Unfortunately the emergency services had not advanced as quickly as the rest of the community. The purpose of this applied research was to establish the need for fire hazard surveys as well as to develop a method that will best serve the responding emergency units.

This research project utilized an "Action" research method in order to determine whether the safety of responding personnel, as well as the effectiveness of strategies and tactics would improve upon implementing a fire hazard survey program. This was accomplished by utilizing the following research methods:

1. Identify the need for fire hazard surveys by examining what other departments are doing to prepare their responders.
2. Identify "target hazards" within the city of Miramar.
3. Identify the most appropriate method of conducting fire hazard surveys by evaluating programs being utilized by other agencies and determine what will work best for the City of Miramar.

4. Survey officers to determine if fire hazard surveys are being used and if so in what capacity.

In addition a “Literature Review” of books, journal articles, newspaper articles and national publications was conducted, as well as interviews and discussions with officers and emergency response crew members from other fire-rescue agencies.

As a result of this research it was determined that there was a definitive need for “Fire Hazard Surveys” within the City of Miramar Fire-Rescue.

Table of Contents

Abstract.....	Page 3
Table of Contents.....	Page 5
Introduction.....	Page 6
Background & Significance.....	Page 7
Literature Review.....	Page 11
Procedures.....	Page 20
Results.....	Page 24
Discussion.....	Page 27
Recommendations.....	Page 29
Reference List.....	Page 32

Appendices

Appendix A.....	Page 34
Appendix B.....	Page 39
Appendix C.....	Page 41
Appendix D.....	Page 43

Introduction

Established in 1955 as a retirement community, the City of Miramar (FL.) was the destination for northeasterners attempting to escape from cold winters and a high cost of living. For nearly four decades the city remained a “bedroom community”. In the late 1990’s it became apparent that the City of Miramar was an attractive alternative for businesses looking to conduct operations in the metropolitan Fort Lauderdale/Miami area. Being one of the few cities in Broward County that still had large areas of land undeveloped, the business community realized that the City of Miramar offered many advantages. These businesses began constructing buildings in excess of 100,000 square feet throughout the central city area. Many of these businesses utilized manufacturing and storage techniques that the Miramar Fire-Rescue department was not prepared to deal with.

While the majority of the responses that the fire-rescue department responds to are still related to emergency medical services (EMS), there still stands the possibility of a major fire incident at one of these many businesses. The department’s fire-life safety (FLS) bureau is required by Florida law to inspect each of these buildings on an annual basis. Very little is known about these businesses by the company level crews. This lack of information puts the crews in a tremendous disadvantage. The purpose of this research project was to first demonstrate the need for fire hazard surveys in the City of Miramar, and secondly, to determine the best method for implementing a fire hazard survey program and how those surveys are to be utilized in and emergency response.

While conducting this research an “Action” research method was utilized. This method of research was utilized due to the fact that this research is “Taking action to solve an existing problem and to improve performance” (USFA, 2008, II-16). Additionally the purpose of this

research is to “apply new information/theories/methodologies to actual organizational problem/need” (USFA, 2008, II-16). The research questions that this project is addressing are as follows:

1. Is there a need for fire hazard surveys in the City of Miramar Fire-Rescue?
2. How can a fire hazard survey program be implemented in the City of Miramar Fire-Rescue?
3. How will the information from the fire hazard survey program be utilized by crews?

Background

In order to better understand the significance of this research it is first important to understand the composition of the City of Miramar. Located in South Eastern Florida, the City of Miramar is the southernmost city in Broward County, Florida. Miramar is bordered to the south by Miami-Dade County and is approximately 13 miles from the City of Miami and the same distance from the City of Fort Lauderdale to the north. The eastern boundary of the city is six miles from the Atlantic coast. According to the 2006 United States census the city has 112,000 full time residents. These numbers are up from the 2000 census which reported a population of 72,739. It is expected that the 2006 numbers will increase to 130,000 full time residents with the 2010 census results.

The City of Miramar has a mix of land usage, the majority of which is single family homes. These homes range in age from the mid 1950's to brand new homes that are currently being constructed. According to the 2010 census there are 40,924 housing units in the city of Miramar. There is an obvious delineation of the industrial section of the city compared to the residential areas. The majority of industry is located in the center of the city, which divides the older homes to the east from the newer homes to the west. According to the planning and

development division of the City of Miramar, as of 2010 there are approximately 522 commercial and industrial parcels in the city. Each parcel could contain multiple businesses.

Currently the City of Miramar is protected by a municipal police department as well as a full time career fire-rescue department. The fire-rescue department operates four full time fire stations, each of which houses one advanced life support (ALS) fire suppression unit and one ALS transport unit. According the City of Miramar Fire-Rescue communications division the city responded to approximately 10,594 requests for emergency services in 2010 (See Appendix A for a complete response summary). 8,730 of those requests were for EMS calls. While 1,856 of these calls were for reports of fires, 25 of the incidents involved commercial property.

The department's organizational structure consists of a Fire-Rescue Chief; two Deputy Fire-Rescue Chief's which manage two distinct divisions. The Administrative Division is responsible for functions such as human resources, communications, dispatch, logistics and fire-life safety. The Emergency Services Division is responsible for daily emergency operations, including EMS as well as the Training Division.

The Training Division consists of one Division Chief and two Captains. The Training Division is responsible for fire, EMS, Human Resource and Occupational Safety and Health Administration (OSHA) training to all department members, including civilian employees. In addition to the training responsibilities, the Training Division is responsible for the development of the departments "fire" Standard Operating Guidelines" (SOG's). These guidelines are inclusive of several key aspects of fire operations including command, safety, and response guidelines. Also included are the administrative components of the quality management program including root cause analysis, post incident analysis (PIA), and the management and "Quality Assurance" (QA) review of the department's National Fire Incident Reporting System (NFIRS)

program. This quality assurance review includes a comprehensive review of reports for all significant incidents, in order to ensure accuracy and completeness of the report. These “significant” incidents also receive a PIA review. The intent of these PIA’s is to identify what went well as well as opportunities for improvement. As a result of the information gathered during PIA’s changes can be made to operational procedures as well as equipment and policy programs.

A product of these PIA’s has been a recurring finding that crews operating in the “Hot Zone” were not familiar with the “floor plan” of the building. This finding is very concerning due to the fact that since the PIA program was implemented in January of 2010, all but one of the incidents reviewed took place in residential structures less than 2,000 square feet. The one fire that took place in a business occurred on Sunday, September 19, 2010, during which a large automotive repair facility had a fire breakout in an area above the office that was being used for storage of automotive parts and paperwork from the business. When crews attempted to make entry into the building they struggled to find the seat of the fire due to unfamiliarity with the business. At one point interior attack crews made entry into the office space which was directly below the location of the fire. This situation endangered the crews operating in that area.

In the past there has never been a formal pre-fire planning process at the City of Miramar Fire-Rescue department. This has resulted in a disadvantage for crews responding to incidents at businesses throughout the city. Most of the time crews are unfamiliar with the layout of the businesses or even what processes are taking place at that location. Familiarity with fire alarm systems, water supply and automatic extinguishing systems (AES) is non-existent except for those locations that have reoccurring “false alarms”. Those locations that have stable alarm systems are only visited annually for a “fire inspection” by the department’s FLS bureau.

Without a comprehensive pre-planning process, crews are going to continue being placed at a disadvantage during emergency responses.

According to the City of Miramar Fire-Rescue Department's FLS Bureau, there were 2,394 businesses inspected in 2010 by the bureau. This number is up significantly from 2000 during which 1,326 businesses were inspected. These businesses can range in size from several hundred square feet to several hundred thousand square feet. While most of these businesses do not have any inherent hazards such as chemical storage or manufacturing processes that may endanger personnel, there are numerous facilities that do. One example of this is a business known as "Propulsion Technologies" located at 15301 SW 29 Street in Miramar Florida. This business is responsible for the salvage and resale of aircraft parts. As part of the process, Propulsion Technologies utilizes two large "parts cleaning" machines. These machines utilize a fluid that is highly flammable, to clean the aircraft parts; each machine is fed by a tank that contains up to 1,000 gallons of the flammable liquid for each machine. Businesses such as Propulsion Technologies are dotted throughout the business corridor of the City of Miramar. While not every business in the City of Miramar has the inherent hazards that Propulsion Technologies does, it is apparent that Miramar Fire-Rescue crews are facing the possibility of more commercial/industrial hazards. How extensive these hazards are will not be evident until crews begin surveying these buildings.

The faster that first responders can locate and access an emergency, and then safely operate in a facility, the sooner the incident will be controlled and facility operations restored to normal. A pre-emergency plan can help institutions achieve this goal. (Jakubowski, 2009). The act of pre-planning a facility prior to an incident is exactly what the Executive Analysis of Fire Services Operations in Emergency Management (EAFSOEM) emphasizes in their curriculum. A

proactive approach to emergency management is the goal of EAFSOEM, which is evident in the Community Hazards Emergency Response-Capability Assurance Process (CHER-CAP) as well as the operational period planning cycle which utilizes the “Planning P” in order to achieve a “pro-active” response to emergencies. By utilizing this type of philosophy for emergency response preparedness agencies can better plan what resources and equipment are needed well in advance of an emergency. This is exactly what the United States Fire Administration cites as one of its goals for the United States Fire Service, to “Improve the fire and emergency services’ capability for response to and recovery from all hazards” (USFA, 2010a).

Literature Review

Lessons Learned

A review of the literature regarding pre-fire planning demonstrated a common theme, much of the literature started out by highlighting situations that caused serious damage to fire equipment and injuries to fire personnel. Ultimately this is what we are trying to prevent by conducting these pre-fire plans. The decisions of how to conduct pre-fire planning and how those pre-fire plans are to be utilized during emergency responses must be made before a program is implemented. The Firehouse article “On The Job: Indiana” highlights an incident that took place on July 7, 2005 during which a building that was constructed in 1936 and was originally intended for the storage of alcohol, was converted to a plastic recycling warehouse. The building was 160 feet wide by 120 feet long. It was equipped with fire sprinklers however at the time of the fire they were not operational! The fire was so intense that one attack line crew made entry into the building and were inside for less than one minute before their helmets and Self Contained Breathing Apparatus (SCBA) face masks began to melt. The fire burned for more than 24 hours before it was finally extinguished. The building sustained four million dollars in

damage and the fire department sustained \$8000 in damaged equipment and the loss of one truck (Bradish, 2006). From this incident a very valuable lesson was learned regarding the most basic of fire fighting techniques, and that is how much water, and what resources are going to be needed? Had the local jurisdiction performed a pre-plan on this building they may have recognized that the amount of water necessary to combat a fire in this building was not readily available. In the book “firefighting strategy and tactics” there is a basic list of things to consider when selecting attack lines: What is the location of the fire? What materials are burning? How much is burning? Where is the fire extending to? Where is the line going to be placed or stretched to? What areas need immediate attention? How much staffing is available? What is the building’s construction? What is the buildings height? And what are the building dimensions? (Angle, 2001). These ten basic questions can assist in determining what is needed to combat any fire. Of these ten questions four of them can be determined prior to the incident occurring by conducting a basic pre-fire plan. What materials are burning? What is the buildings construction? What is the buildings height? What are the buildings dimensions? Are all questions that could have been answered prior to the fire. By answering these questions and having critical information available to response crews and incident commanders, fire departments are better prepared to deal with these emergencies. A pre-fire plan is like a “coach having the play book at a game” (Angel, 2001). Pre-incident planning is invaluable information from an operational and safety standpoint.

One thing that the City of Miramar is not short on is retail space and mercantile occupancies. The National Fire Protection Agency (NFPA) standard 101 defines mercantile occupancies as one used for the display and sale of merchandise (NFPA, 2009a). The city is home to numerous “Big box” stores such as Target, Wal-Mart, Sam’s club, Home Depot, Kohl’s,

Office Depot, Office Max and Staples. In addition to these large retail stores, the city is also home to nine grocery stores that all have strip malls attached. This retail element can pose just as big of a challenge and hazard as some of the industrial buildings that we are faced with. In an article discussing the importance of pre-fire planning that appeared in the "*NFPA Journal*" the challenges that crews are faced with in a mercantile occupancy are discussed. The point that was made is that the fuel load and arrangement of displays as well as undivided areas may make it impossible to control an advanced fire in a large store (Klaene, 2011). In addition to the hazards faced by firefighters, there is an added element of danger associated with mercantile occupancies when you consider the fact that there may be numerous shoppers inside the store at one time. These shoppers are not familiar with the building as a worker in a commercial or industrial building would be, which may add to the concern for life safety. The time of year also plays a large role in considering what needs to be accomplished during firefighting operations at a mercantile occupancy. During the holiday season shoppers can become very focused on what they are doing. This may make it difficult to convince shoppers to leave during an emergency incident. While mercantile fires are not a major concern to the safety of the public, which is evident by the fact that the most deadly mercantile fire occurred in 1968 in a Richmond Indiana sporting goods store as a result of a gas leak. The transient nature and seasonal effects of shoppers has not made a huge impact on the rates of deaths and injuries. In a report cited by Bush, K. from 1999-2002 an average of 17,200 fires occurred in mercantile stores throughout the United States. As a result of these 17,200 fires there were nine civilian fatalities and 288 civilian injuries (Bush, 2011). While these numbers seem mild compared to other types of fires, there is a very real concern for the safety of firefighting crews that are responding to these incidents.

November 1, 2010 a firefighter was injured in Redondo Beach California when a steel roll up door fell on him while battling a fire at a Target store (Morino, 2010). March 17, 2005 one firefighter killed and another seriously injured while fighting a fire at a hardware store (Associated press, 2005). August 28, 2006 one firefighter killed and four others seriously injured when the floor in a 99 cent store collapsed while fighting a fire in New York City (Lueck, 2006). And of course one of the most infamous mercantile fires of our time occurred June 18, 2007 in Charleston South Carolina, during which nine firefighters were killed and another nine barely escaped serious injury when a fire in a mercantile building selling furniture flashed over and subsequently collapsed the building (NIOSH, 2009). From these examples it is apparent that mercantile buildings can pose a serious threat to the safety of firefighting crews. Regardless crews are still going to fight fires in these types of buildings. The change that needs to occur is that crews need to be aware of the hazards they face not only in mercantile buildings but in any building that they respond to. This can be accomplished through the use of pre-fire plans. According to James Langdon “we know that if a digital pre-plan system had been in place during certain incidents such as the Sofa Superstore fire, the tragedies surrounding those incidents might never had occurred” (Langdon, 2010).

Why do we need pre-fire plans?

As with any unexpected situation the more information that you have available to you, the better chance you will have of being successful at managing the situation. That is particularly true when dealing with situations that have the potential to take human life. “Trial and error” is not a reasonable method of controlling incidents of this type, however most of the time when encountering a fire in an unknown building; this is exactly what crews are faced with. While it is true that firefighters and incident commanders have years of experience, training and education

to assist them in their decision making process, ultimately there is still a factor of the “unknown”. A pre-incident planning program is intended to eliminate some of this unknown information and provide an incident commander and response crews with information about the building, its contents, potential obstacles, the buildings water supply and fire protection systems even before they arrive on scene. This type of managing emergency incidents is not as easy as it sounds though. Many fire officers will rely solely on their training and past experience in order to make a rapid decision before they will use information from sources such as pre-fire plans. The “Recognition-Primed Decision” making model is a model that was developed by Gary Klein in 1985 (Angel, 2001). This model determined that in less than 12% of the cases studied were there any evidence of simultaneous comparisons and relative evaluation of two or more options. Essentially what was discovered during this research was that fireground commanders utilized their past experience in 80% of the cases that they encountered based on previous encounters with emergency situations, and did so without considering a second option (Klein, 1988).

“Situational Awareness” and “Risk Management” are terms that have become the core of incident management in the fire service. Situational awareness refers to the understanding of events as they unfold in time and projecting the consequences of those events in the near future (Gassaway, 2010). Every incident commander needs to have a thorough and complete “Situational Awareness” of the incident that they are dealing with. In order to have a complete understanding of the incident, information is necessary that will forewarn incident commanders of the hazards that they face at an incident. Rich Gassaway described his frustration in reading firefighter line of duty death and near miss reports. He stated that he often wondered why firefighters were unable to see what was unfolding during these tragic incidents, but realized that ultimately he wasn’t fair; he knew the outcome while firefighters operating at the scene did not

(Gassaway, 2010). In 2009 there were 90 firefighter fatalities. Of the 90 deaths 30 of them occurred while operating on the fireground, 19 of which were at the scene of a structure fire (USFA, 2010b). The questions that must be asked is how many of these line of duty deaths and near misses may have been able to be prevented if additional information about the incident was available to the incident commander and firefighting crews; information about the scene that may have been contained in a basic pre-fire plan.

The Insurance Services Office (ISO) is an organization that supplies statistical, actuarial, underwriting and claims data to insurance companies. ISO serves insurers, reinsurers, agents and brokers, insurance regulators and other participants in the property/casualty insurance market place (ISO, 2011). As part of these services ISO has a “Public Protection Classification” (PPC) program. This program is designed to help establish fire insurance premiums for residential and commercial properties. In order to set these premiums, ISO conducts evaluations of fire departments then assigns a “classification” scale to the organization. The classification scale is based on a scale of 1-10. Several factors are considered when ISO evaluates a fire department fire suppression delivery; this includes the fire department itself, the available water supply and the communications center. This is accomplished by utilizing a point scale. The scale is 1-100, departments scoring a 90 or better are awarded a class 1 rating, 80-89 a class 2. An ISO rating of 10 indicates that the department does not meet the minimum standards of ISO. The minimum requirements of ISO is to conduct at least 12 hours of training per year and respond to structure fires with at least four personnel (Galvin, 2007). By improving departments ISO rating the benefits are realized by the community in the form of lower insurance premiums for their property. While the focus of an ISO evaluation is primarily training, water supply and communications, pre-fire plans do play a role. In order to receive full credit from ISO for pre-fire

planning, they require that each commercial, industrial, institutional and other similar type buildings be pre-planned twice a year (Galvin, 2007). This is a very difficult goal to accomplish for most departments.

What is needed for a Pre-fire plan program?

With the previous information in mind it is critical to the success of a pre-incident planning program that it contains valuable and useful information that will assist incident commanders with their decisions. These plans need to be familiar so that the incident commander does not have to search for the information in document. It is recommended that pre-incident plans be on a form that is used department wide (See Appendix B for sample form). These forms should not vary depending on the crew that is conducting the survey. Consistency is critical with this type of information. The pre-incident plan should be conducted by responders (Smith, 1998). By doing so crew members will have a familiarity with the structure while under controlled circumstances rather than becoming familiar with the site during an emergency event. By having someone other than the emergency response crews conduct these pre-incident plans crews lose the ability to see what they are facing in a building. Pre-incident plans should also be updated at a specified time, annually or every two years. With the tremendous turnover in businesses during the economic crisis it is critical that agencies perform these pre-incident plans on a regular basis. Agencies may want to consider getting the “core” information about occupancies, rather doing a thorough pre-fire plan on a few occupancies. This approach will allow your agency to cover more occupancy’s in your district. As the years go by more information can be added to your plans (Galvin, 2007). Developing a list of target hazards is beneficial to the pre-incident planning process. According to the International City Management Association (ICMA) text Managing Fire and Rescue Services, target hazards can be defined as

“large structures with multiple floors (or large floor areas) or properties that pose significant hazards and represent a potentially large loss of life or property” (ICMA, 2009).

A pre-incident plan should contain the basic information needed to combat a fire at that location. It is very easy to clutter a pre-incident plan with information that is not useful to the incident commander. Be careful when utilizing drawings of buildings that are provided to you from the business itself. These drawings can often times contain information that is not useable to the incident commander with things such as plumbing and telephone boxes (Kalene, 2000). Accessing pre-incident plans is another crucial element to the success of pre-fire planning. Many fire chiefs feel that pre-incident planning is not an option; it is a requirement of fire departments to perform. As such the way that responder's access these plans are crucial. Many agencies have utilized technology as the medium by which to access pre-fire plans. Val Codino interviewed Fire Chief Louis LaVechia of the Milford, Connecticut fire department regarding this very issue (Codino, 2004). Chief LaVechia stated:

The First Look Pro® software lets fire personnel organize and locate pre-fire plan diagrams and information within seconds. By simple selecting an address, occupancy name or pre-plan identification number, the incident commander has immediate access to all the pre-fire plan information that is critical to the firefighting effort.

This type of software appears to becoming more popular with fire departments. While the initial start up cost can be very expensive when considering hardware, software, training and maintenance, it seems that this method by which to access pre-fire plans is beneficial. Consider the fact that by using hard copies every time that a pre-fire plan is update, only the unit performing the survey will have the information that is unless copies are distributed for other units. While copies sound like an easy alternative, consider a large agency that covers hundreds

of square miles with scores of units in the system. A simple software file update can reach numerous units with ease.

Standards for Pre-Incident Planning

According to the NFPA “Standard for Pre-Incident Planning #1620” was developed as a result of a large warehouse fire in Ohio that occurred in 1987, during which there was a large fire loss even though the building was sprinklered (NFPA, 2009b). As a result a panel was convened to exam the problem of large loss fires in sprinklered buildings. This panel developed several recommendations for dealing with the issue of large loss fires in sprinklered buildings, one of which recommended to adequately perform a pre-incident evaluation of those types of facilities. Subsequently the first standard on pre-incident planning was developed by the Fire Service Training Committee. The document was titled “NFPA 1420, Recommended Practice for Pre-Incident Planning for Warehouse Occupancies”. Upon release of that document the committee evaluated the program and determined that NFPA 1420 was too narrow in scope and that a document should be developed that would broaden the scope of the standard. In 1998 the committee issued the first edition of that document in the form of NFPA 1620 titled “Recommended Practice for Pre-Incident Planning”. Since that time the “Recommended Practice for Pre-incident Planning” has evolved into the “Standard for Pre-Incident Planning”. The document has undergone two revisions since, one in 2003 and again in 2010, which is the current edition at the time of this review.

NFPA 1620, Standard for Pre-Incident Planning consists of ten chapters. Chapter 1 Administration, Chapter 2 Referenced Publications, Chapter 3 Definitions, Chapter 4 Pre-Incident Planning Process, Chapter 5 Physical and site considerations, Chapter 6 Occupant Considerations, Chapter 7 Water Supplies and Fire Protection Systems, Chapter 8 Special

Hazards, Chapter 9 Emergency Operations and Chapter 10 Pre-Incident Plan Testing and Maintenance (NFPA, 2009b). These ten chapters are designed and intended to be a standard by which agencies develop their pre-incident plans. While the document is very comprehensive it is impossible for it to cover every actual scenario that a local agency may encounter. Therefore this document should be used as it is intended and that is a basic standard for developing pre-incident plans, a framework for the development of pre-incident planning programs.

Literature Review Summary

As a result of this literature review it has become apparent that pre-incident planning is vital to the success of fire departments and to the safety of firefighting crews. It is also apparent that an effective pre-incident planning program consists of multiple components that cross divisional boundaries within fire-rescue organizations. For this reason it is critical that agencies considering implementing pre-incident planning programs do so in a systematic organized manner that takes into consideration the components previously discussed during the literature review. In order to be successful it will be necessary to get “Buy in” from the Fire Chief to conduct a pre-incident planning program that will cost the department time, money and resources. It will also be necessary for other department divisions to work together to be successful, the fire inspection bureau, the operations division, the training division will all need to work together in order to develop policies, procedures and schedules to conduct and utilize pre-incident plans.

Procedures

For this research project, an “Action” research method was utilized in order to “solve an existing problem or to improve performance” of the City of Miramar Fire-Rescue Department (MFR) (USFA, 2008). The research for this project began with a comprehensive review of the MFR current ability and the need to have a pre-incident planning program. This research started

in March of 2011 and concluded in August of 2011. The research consisted of several components including a records review of emergency responses in the City of Miramar, a review of the literature within the industry pertaining to pre-incident planning, a review of the applicable standards in the fire-rescue industry dealing with pre-incident planning as well as surveys being sent to numerous fire-rescue agencies located both within Broward County as well as across the United States of America (U.S.A.).

Records Review

A review of records was conducted “in-house” utilizing information developed from the departments Fire Record Management System (FireRMS). The system is a commercially available software marketed by Zoll data of Boulder, Colorado. The software is sold as “Rescue Net FireRMS” (formerly Sunpro). The software is compliant with The National Fire Incident Reporting System (NFIRS) as well as the Florida Fire Incident Reporting System (FFIRS). Data is gathered by the software from the inception of the call by automatically receiving data from the MFR communication center’s “Computer Aided Dispatch” (CAD) software, as well as manual entry of data from responding crews. As a result of this data entry the software is able to produce reports that are predetermined by the vendor or can be customized according to the agencies needs. For the purposes of this research a customized report was utilized that yielded information regarding the number and types of calls that the MFR department responded to during the time period of January 1, 2010 to December 31, 2010. The report also stratified the calls into “types”, for example structure fires were categorized as residential or commercial. The limitations with this system are its reliance of accurate information being entered into the software by the user. It is possible that non-structure fires are coded incorrectly and entered as

structure fires as well as the possibility that commercial structure fires can be recorded as residential structure fires.

Literature Review

The literature review attempted to provide evidence of the following. First, that a pre-fire planning program was needed at the MFR department based on industry standards and the amount of commercial, industrial and institutional buildings coming into the City of Miramar. Secondly, the benefits that a pre-fire plan program would have to firefighting crews and incident commanders. Third, what components of a pre-planning program are necessary in order to have an effective program? Finally, which of those components will be required to create the most effective program for MFR. This process began with a review of available literature that dealt with pre-fire planning, incident command and fireground operations. The majority of the literature acquired for this phase of the research was gathered at the Learning Resource Center (LRC) located at the National Fire Academy in Emmetsburg, Maryland. Additional research literature was acquired from several industry web sites such as ISO, Fire Engineering and Firehouse.com. Additionally material was acquired from the training library located at the MFR department.

Standards

A review of applicable standards was conducted in order to determine what “gaps” were present at the MFR department in regards to pre-incident planning. While there is limited information regarding industry standards, there were two that were prevalent. The first was the NFPA standard on pre-fire plans #1620. The second “standard” is not necessarily a true standard. The requirements of ISO were reviewed as a “standard” due to the fact that most fire service organizations utilize this source as a standard for their communities.

Surveys

Surveys were sent to Fire Departments throughout the U.S.A. as well as locally within Broward County, Florida. The survey lists that were sent nationally were developed based on two main sources. The first source was a group mailing list that was developed as a result of the first three years of attendance of the Executive Fire Officer Program (EFOP) at the National Fire Academy from 2008 to 2010. The second source of national exposure for the survey was acquired by requesting the National Society of Executive Fire Officers (NSEFO) to forward the survey to their membership. The local survey was distributed via the Fire Chiefs' Association of Broward County's (FCABC) Educational Committee. As a result it is believed that approximately 200 fire departments both nationally and locally were surveyed for this project.

Assumptions and Limitations

As previously stated the data gathered from the records of the MFR department are believed to be as accurate as possible however human error must be considered when gathering data during the records review. Additional assumptions and limitations include the possibility that more than one person responded to the survey from the same organization. This would result in a saturation of the data from one sample point. As a result it is possible that the information being evaluated is flawed due to duplicate data being gathered from the same organization. This is possible in the NSEFO survey data and likely to have occurred in the BCAFC survey data. It is unlikely that this occurred in the EFOP data due to the fact that agency representatives are not duplicated in these mailing lists. While the data was segregated by national and local responses, the national survey results were not segregated according to NSEFO or EFOP responses. The surveys developed for both national and local evaluation were identical (See Appendix C survey questions).

Results

Survey question #1, Does your organization have a pre-fire plan program? Nationally 161 of the 187 survey participants responded to this question. As a result it was determined that 87% of those departments that responded do in fact have some type of program in place to perform pre-incident planning. Locally 26 responses were received from 24 agencies within Broward County. The results for this group was slightly lower than that of the national response. It was determined that 76% of the departments in Broward County currently have a program in place to perform pre-incident planning.

Survey Question #2, Who conducts the pre-fire plans? Nationally 158 participants responded to this question. 85% indicate that pre-fire plans are conducted by company level crews. 5.7% responded that their fire inspectors conduct these plans and 8.9% (14 out of 158) responded “other”. These 14 responses indicated in the majority of the time that both company level and fire inspectors perform pre-fire plans. The remainder of the responses indicated that “The building department” or “Senior Management” conducted the pre-fire plans. Locally 24 responses were received the majority of which indicated that pre-fire plans were conducted by company level crews (90%).

Survey Question #3, What buildings are included in your pre-fire plan program? A total of 159 responses were received for this question nationally. The majority of the responses indicated that Commercial occupancies, 94.3% are their primary focus during the pre-planning process. With industrial 91.2%, Institutional 86.8%, retail 83% and residential 23.9% consisting of the remaining priorities. 13.8% of the responses indicated “other”. Most of the “other” responses included “Multi-Family” residential dwellings and churches as other priorities in the

pre-plan process. Locally the majority of the responses indicated that commercial occupancies were their priority as well.

Survey Question #4, How often are these surveys conducted? Both nationally and locally the data revealed that the literature was correct in how often a pre-fire plan should be conducted. It is recommended that pre-fire plans be conducted at least annually (NFPA, 2010), however due to the restrictions of time and budget it is likely that this is not occurring. As a result the survey identified that 32% of the responding agencies conducted pre-fire plans annually, 8.8% conducted them twice a year and 5.7% conducted them every two years. The remaining 53.5% had no designated time for revisiting occupancy. The pre-fire plans were revisited every three years or a phone call was placed to the location to discuss any changes.

Survey Question #5, Does your organization have a policy for the use of pre-fire plans when responding to emergencies? Nationally 158 responses were collected for this question. Of the 158 responses 98 agencies do not have a policy in place for crews to utilize pre-fire plans during emergency responses. This equated to 62% of the response being “no”. The remaining 38% did in fact have a policy for the use of pre-fire plans during emergencies. Locally the numbers were similar. Of the 24 agencies in Broward County 15 did not have a formal policy for the use of pre-fire plans.

Survey Question #6, How are these plans made available to crews in the field? It appears that the method for accessing pre-fire plans in the field varies greatly. While nationally 42.8% of the 159 respondents indicated that their plans are available on a computer via software numerous other methods were identified. Hard copies account for 35.2% while alternative methods accounted for the remaining 15.7%. This may include the plans being located in the communications center and the information being relayed to crews in the field by dispatch, or the

district officer printing a copy and bringing it to crews in the field. Many of the comments indicated that their agencies were in the process of making the information available to crews in the field electronically via software on mobile data terminals (MDT). Locally the majority of the agencies indicated that these plans are available to crews in a “hard copy” format, again their agencies are in the process of converting to an electronic system. The concerning result of this survey is that 6.3% of the agencies do not have this information available to crews at all.

Survey Question #7, Who are the plans available to during an emergency incident?

According to the national survey 127 of the 158 (80.4%) responses indicated that these pre-plans are available to the company level crews. Additionally these plans are also available to the Battalion and Division Chiefs during an incident. This data is similar for local agencies as well.

Survey Question #8, Do you have the ability to provide "mutual aid" companies with pre-fire plans? 62.9% of the national responding agencies indicated that they do not have the ability to provide mutual aid companies with pre-fire plans. 37.1% indicated that they did have this ability. This is an unexpected and encouraging result. The expected outcome for this ability was much lower than the result. Locally the numbers were similar since the majority of the agencies utilize a “hard copy” of the pre-fire plan during incidents. This result demonstrates the importance of being able to generate hard copies of pre-plans in the field.

Survey Question #9, When are these plans usually used during an incident? According to the survey results the majority of the time that pre-fire plans are used is by the incident commander upon their arrival on scene. 85.4% of the responses indicate that this is the manner in which pre-fire plans are being used. Again a concerning result is that 10% of the agencies do not have this information available to crews in the field.

Survey Question #10, How often are pre-fire plans used during emergency responses?

During the literature review it was discovered that during emergency incidents responders usually “fall back” onto their past experiences. The result of this data alludes to this fact in that 53% of the responses indicate that a pre-fire plan is only consulted “occasionally” during emergency responses and 10% indicate that pre-plans are never used. Only 7% of the agencies always use a pre plan when available.

As discussed in the “Assumptions and Limitations” section of this research there are some potential flaws with the results of this survey. It is possible that multiple responses could have come from the same agency

Discussion

One common theme has been reoccurring during this research and that is a good solid pre-incident plan is critical to the success of many of the emergency incidents that we respond to. In order for a plan to be a useful tool for responders the plan should include information about the occupancy’s layout, access, construction features and a wide range of variables that are specific to that particular building (Smoke, 1999, p. 288). The vast majority of the literature reviewed emphasized the importance of developing a pre-incident planning program; in this sense all of the literature agreed that agencies should have a pre-plan program. The way in which these programs are developed was as variable as the authors who wrote them. The responsibility and components of a program as discussed by James Smith (Smith, 1998), the emphasis of what a good pre-fire plan should contain as discussed by Bob Galvin (Galvin, 2007) and the keys to success according to Curtis Massey (Massey, 2004). All of these articles focused on the importance of certain areas of the pre-planning process, each of which departments should take into consideration when developing their own program. The survey results agreed with all of the

authors regarding the importance of having a program in place. 86% of the departments surveyed indicated that they do conduct pre-plans. This indicates the realization from departments of the importance of having a pre-incident planning process, in accordance with the literature recommendations. James Smith (1998) summed up the value of pre-incident plans by saying the following:

Knowledge is a tool. The more tools that we have at our disposal at an emergency scene, the better the odds of a successful outcome. A well informed incident commander can handle problems effectively, with fewer resources and less chance for error.

It is apparent that many agencies agree with this philosophy. With so many agencies having a program in place it was concerning to discover that while a pre-incident planning program was in place most agencies did not have a policy for their use. 62% of the agencies that responded indicated that they did not have a policy or procedure for the use of pre-incident plans during an emergency incident. This result is counterintuitive to the realization of the importance in having a program, and as a result only 54% of the departments surveyed used pre-incident plans only “occasionally” during their responses.

The ultimate goal of this research was to determine a need for pre-incident planning and subsequently implement a useful and adequate pre-incident planning process within the MFR department. It is quite obvious that pre-incident planning should be a part of every agencies response and that pre-plans can make or break an entire operation, whether it be in a chemical plant, hospital, shopping mall or high-rise building (Massey, 2004). The dilemma is how to develop a program that will meet the needs of the MFR. It is important to avoid some of the pitfalls that other agencies have faced. The occasional use of pre incident plans is not the intent of pre-incident planning programs. The intent is to develop a useful tool for responding crews that

will make a difference in the outcome of their response, with the primary focus being on the safety of those involved at the scene.

As a result of this research and the recommendations of others that have written on this topic, it is evident that in order to create an effective and efficient pre-incident planning program careful consideration must be made regarding the architecture of the program.

Recommendations

It has been discovered during this research that it is necessary for the MFR department as an agency to develop a functional and adequate pre-incident plan program. With over 160 commercial and residential structure fires in 2010 (See Appendix A) and 86% of the departments surveyed having a program in place, it is apparent that there is a need for a pre-incident program in the organization. In order to reach the point that a pre-incident planning program is effective, numerous process steps will first need to be developed. First and foremost will be to get “buy-in” from the users of these plans, even the most detailed program will not be effective if the response crews in the field do not believe in the program that is in place or utilize that program during emergency responses. A discussion with crews regarding what a good pre-incident plan can do for them as responders and incident commanders will help in the realization of the importance of these plans. Hopefully this realization will translate into a more detailed pre-incident plan being developed by the crews in the field. The next step in the process will be to survey the end users of the product in order to determine what type of program will be most useful to them. This may include utilizing software versus hard copies, what type of information is most important to them while on scene of an emergency incident as well as how to conduct the pre-plans throughout the year.

Recommendations for the implementation of a pre-planning program include the development of a formal policy and procedure for pre-indent planning. Since pre-incident planning affects numerous divisions within an organization a committee may need to be established in order to assist in the development of this policy. The committee will need to address issues such as what information will be collected during a pre-incident survey, how will that information will be stored and accessed by emergency crews, how often will that information be updated, when will these plans be used during emergency responses and who will be managing the program?

The mechanism by which crews enter, update and access these pre-fire plans is crucial to the success of this program. For the purposes of the MFR department there are limited choices. Currently there are not any plans available to crews whatsoever. Any additional information would be an improvement. There is the option of utilizing a hard copy format however this would require that updates be created and distributed to each unit in-service throughout the department. As part of the MFR department communications program with the Broward County sheriff's office (BSO) there is the availability of utilizing dedicated software for pre-incident plans. The software known as "First Look Pro®" is available to all agencies that are currently utilizing the BSO public safety answering point (PSAP). This software is specific to pre-incident planning. The advantages to this system are that once the information is entered into the system anyone with access to the software can view the plan. This includes not only all of the MFR units but all of the units within Broward County (Fl.) that utilize the county PSAP. For this reason it makes it very attractive when considering mutual aid response as well as the fact that there are limited resources available to update information on units throughout the system. As stated in

Codino's article "First Look Pro® helps reduce property damage by giving complete information on a building during fire call responses" (Codino, 2004).


Another critical element in the development of a function pre-fire planning program is to determine what facilities will require a pre-fire plan. As discussed during the literature review it is imperative that buildings with the potential to cause harm to the public and emergency workers should be evaluated (Bradish, 2006). During this evaluation numerous considerations must be made in order to provide a pre-incident plan that is useful to the crews (Angle, 2001). Finally what types of building pre-fire plans will offer the most benefit to our emergency crews. The City of Miramar has a broad base of industrial and retail, as such the consideration must be made as to the likelihood of an incident occurring at one of these locations. A list of recommended structures was developed with the assistance of the MFR department's FLS division (See Appendix D for a complete list of recommended occupancies). This list was based on the recommended definition as described by the ICMA and discussed in the literature review of this research.

References

- Angle, J. et al., (2001). *Firefighting strategy and tactics*. U.S.A. Delmar Publishing.
- Associated Press. (2005, March). *One firefighter dead, another critically injured in Canada store fire*. Retrieved July 2, 2011, from: <http://www.firehouse.com/news/lodd/one-firefighter-dead-another-critically-injured-canada-store-fire>.
- Bradish, J. (2006, April). On the job: Indiana, 40 departments respond to Greendale warehouse. *Firehouse magazine*, 31(4), 110-112.
- Bush, K. (2011, July). *Fire safety concerns in mercantile occupancies: shopping for solutions*. Retrieved July 2, 2011, from http://fpemag.com/archives/article.asp?issue_id=50&i=409.
- Codino, V. (2004, April). Pre-fire planning: new technology, tailored software. *Firehouse Magazine*, 29, 157-160.
- Galvin, B. (2007, January). How pre-fire planning can help improve ISO ratings. *Firehouse Magazine*, 32, 88-91.
- Gassaway, R. (2010). *Fireground situational awareness: why didn't they see it coming?*. Retrieved June 29, 2011, from <http://www.fireengineering.com/index/articles/display.articles.fire-engineering.fdic-articles.features.2010.04.gasaway-situation-awareness.html>.
- Insurance Services Office, (2011). *How ISO serves the property/casualty insurance industry*. Retrieved June 21, 2011, from: <http://www.iso.com/About-ISO/Overview/ISO-Services-for-Property-Casualty-Insurance.html#.TgDc0FtRq1Q>.
- Jakubowski, G. (2009, September). *Don't underestimate the importance of pre-emergency planning*. Retrieved June 20, 2011, from: <http://www.campussafetymagazine.com/Channel/Emergency-Management/Articles/2009/09/Dont-Underestimate-the-Importance-of-Pre-Emergency-Planning.aspx>.
- Klaene, B., Sanders, R. (2011, March). Structural ops, firefighting in buildings; retail plan. *NFPA Journal*, 105, 32.
- Klaene, B., Sanders, R. (2000, November). Pre-incident planning of tactical operations. *NFPA Journal*, 94 (6), 20.
- Klein, G., Calderwood, R., Cirocco, A. (1988). *Rapid decision making on the fireground*. Alexandria, Va. Klein Associates incorporated.
- Lueck, T. (2006, August). *Firefighter dies and four are hurt in Bronx blaze*. Retrieved July 2, 2011. From: <http://www.nytimes.com/2006/08/28/nyregion/28fire.html>.

- Massey, C. (2004, August). Pre-planning: the key to success. *Firehouse Magazine*, 29, 96.
- Morino, D. (2010, November). *Firefighter injured in Redondo Beach Target blaze*. Retrieved July 2, 2011, from: http://www.dailybreeze.com/news/ci_16492650?source=rss.
- National Fire Protection Association (2009a, January). *NFPA 101, Life safety code*. Quincy, Ma.
- National Fire Protection Agency (2009b, December). *NFPA 1620, Standard for Pre-Incident Planning*. Quincy, Ma.
- National Institute of Safety and Health. (2009, February 11). *Nine firefighters die in rapid progression at commercial furniture showroom*. Retrieved July 1, 2011, from: <file:///H:/NFA/EFO%202008/ARP/ARP%203/References/Pre%20fire%20plan%20references/Sofa%20super%20store.html>.
- Smith, J. P. (1998, June). Fire studies – pre incident planning. *Firehouse Magazine*, 23 (6), 18-20.
- Smoke, C. H. (1999). *Company Officer*. U.S.A. Delmar Publishing.
- United States Fire Administration (2008). *Executive fire officer program, operational policies and procedures, applied research guidelines*. (P. II-16), Emmetsburg, Md.
- United States Fire Administration (2010a). *Strategic plan*. Retrieved June 21, 2011, from <http://www.usfa.dhs.gov/about/strategic/>.
- United States Fire Administration, (2010b), *Firefighter fatalities in the United States*. (P. 10-11), Emmetsburg, Md.
- Vazquez, M., Teproff, C., (2011, March). *In last decade Miramar has become the “American dream*. Retrived July 2, 2011, from <http://www.miamiherald.com/2011/03/18/v-fullstory/2122666/in-last-decade-miramar-has-become.html>.

Appendix A



Miramar Fire Rescue

Division of Communications
14801 SW 27th St. Miramar, FL 33027 (954) 438-1277

Reference Totals for Calendar Year 2010

Total Calls 10,594

Dive Rescue Calls

S4C

CAR IN CANAL

8

8



Miramar Fire Rescue

Division of Communications

14801 SW 27th St. Miramar, FL 33027 (954) 438-1277

Reference Totals for Calendar Year 2010

Fire Calls

		1,856
\$25OT	ANY FIRE NOT OTHERWI	242
\$25BF	BOAT MARINE-FIRE	1
\$46	BOMB THREAT	6
\$25BR	BRUSH FIRE	41
\$25CF	COMMERCIAL STRUCTURE	27
\$25DU	DUMPSTER FIRE OUTSID	6
\$25EH	ELEC HAZ/WIRES DOWN	30
\$25EV	ELEVATOR RESCUE	91
\$49F	FIRE ALARM	1,043
\$25HM	HAZ-MAT	30
\$68LI	LOCKED IN	44
\$68LO	LOCKED OUT	27
\$76	MUTUAL AID	12
\$76	MUTUAL AID ASSIST	14
\$25RS	RESIDENTIAL FIRE	70
\$25RS	RESIDENTIAL STRUCTUR	69
\$25SO	SMOKE INVEST OUTSIDE	3
\$25SI	SMOKE INVESTIGATION	8
\$25SI	SMOKE SMELL INVEST I	10
\$25TR	TRASH FIRE	1
\$25UF	UNKNOWN TYPE FIRE	1
\$25VF	VEHICLE FIRE	80



Miramar Fire Rescue

Division of Communications

14801 SW 27th St. Miramar, FL 33027 (954) 438-1277

Reference Totals for Calendar Year 2010

Medical Calls

		8,730
S67AP	ABDOMINAL PAIN	284
S4PED	ACCIDENT VEH VS PED	59
S4I	ACCIDENT W/INJURIES	91
S4R	ACCIDENT W/ROLLOVER	71
S4H	ACCIDENT WITH HIGH H	34
S67AR	ALLERGIC REACTION	50
S70AB	ANIMAL BITE	26
S31	ASSAULT	193
S49A	AUDIBLE ALARM FOR AG	4
S44	BOAT-MARINE ACCIDENT	1
S67BB	BROKEN BONE	17
S67BU	BURN	4
S67CP	CHEST PAINS	596
S67CK	CHOKING	34
S7	DEAD PERSON	25
S67DB	DIABETIC	222
S37IJ	DISTURBANCE JUVENILE	1
S38IJ	DOMESTIC DISTURBANCE	16
S38	DOMESTIC WITH INJURY	99
S26	DROWNING (CANAL/LAKE	4
S26PO	DROWNING-POOL	4
S67EL	ELECTROCUTION	2
S67FA	FALL ASSIST NO INJURY	55
S67FI	FALL INJURY	297
S67FH	FALL INJURY (1FL OR	11
S67FL	FALL INJURY-LOW <UND	154
S36IJ	FIGHT	12
S451	FIRST ALARM	1
S67HI	HEAD INJURY	30
S67HA	HEART ATTACK	37
S3I	HIT & RUN W/INJURIES	2
S14	INFORMATION	1
S67IJ	INJURY	91
S69	LOOSE FARM ANIMAL ON	5
S49M	MEDICAL ALARM	81
S67MM	MEDICAL TRANSPORT FR	94
S20	MENTAL ILLNESS	78
S67UN	NOT BREATHING	39
S67OB	OBSTETRICAL	125
S67OM	OTHER MEDICAL	2,873
S67OD	OVERDOSE	32
S67PO	PASSED OUT/FAINTING	445
S68PA	PATIENT ASSIST (CIVIL	19
S67CO	PB-CARBON MONOXIDE	1
S67PD	PERSON DOWN	42
S41IJ	ROBBERY W/WEAPON (M	5
S67SZ	SEIZURE	363
S68	SERVICE CALL	113
S68	SERVICE CALL (CIVIL	11



Miramar Fire Rescue

Division of Communications

14801 SW 27th St. Miramar, FL 33027 (954) 438-1277

Reference Totals for Calendar Year 2010

S35	SEXUAL BATTERY	4
S33	SHOOTING	21
S67SB	SHORTNESS OF BREATH	636
S34	STABBING	9
S67ST	STROKE	83
S32	SUICIDE ATTEMPT	156
S13I	SUSPICIOUS INCIDENT	7
S73	TRAFFIC	1
S4	TRAFFIC ACCIDENT	842
S67TA	TRAUMA ALERT TRANSP	11
S67TB	TROUBLE BREATHING	33
S67UNC	UNCONSCIOUS	7
S67UM	UNKNOWN MEDICAL	66

Appendix B

Central City Fire Department Pre-Incident Plan				
Building Address		Emergency Contact Name:		
Building Name		Emergency Contact number:		
Building Description:				
Construction Type:				
Roof Construction:				
Floor Construction:				
Occupancy Type:		Hazards to Personnel:		
Water Supply Location #1:		Available Flow:	GPM:	
Water Supply Location #2:		Available Flow:	GPM:	
Water Supply Location #3:		Available Flow:	GPM:	
Estimated Needed Fire Flow Based on a Single Story Involvement				
Level of Involvement		25%	50%	75% 100%
Estimated Needed Fire Flow				
Fire Behavior Predictions:				
Anticipated Problems:				
Private Fire Protection: Sprinklers: <input type="checkbox"/> Standpipes: <input type="checkbox"/> Fire Alarm/Detection: <input type="checkbox"/> Other (note below): <input type="checkbox"/>				
Completed by:		Date:	Last Update:	

Appendix C

Pre-Fire Plan Survey

1. Does your organization have a "Pre-Fire Plan" program?
 - a. Yes
 - b. No

If you answered "No" to question #1 please stop here.

2. Who conducts the pre-fire plans?
 - a. Company Level
 - b. Fire Inspectors
 - c. Other
3. What buildings are included in your pre-fire plan program?
 - a. Commercial
 - b. Industrial
 - c. Retail
 - d. Institutional
 - e. Residential
 - f. Other (Please Specify) _____
4. How often are these surveys conducted?
 - a. Twice a Year
 - b. Annually
 - c. Every Two Years
 - d. No Designated Time
 - e. Other, Please Specify _____
5. Does your organization have a policy for the use of pre-fire plans when responding to emergencies?
 - a. Yes
 - b. No
6. How are these plans made available to crews in the field?
 - a. Hard Copy
 - b. Computer Software
 - c. Not Available to Crew
 - d. Other, Please Specify _____
7. Who are these plans available to during an emergency incident?
 - a. Company level
 - b. Battalion Chief
 - c. Division Chief
 - d. Other, Please Specify _____
8. Do you have the ability to provide "mutual aid" companies with pre-fire plans?
 - a. Yes
 - b. No
9. When are these plans usually used during an incident?
 - a. By Responding Crews, while enroute
 - b. By Incident Command upon arrival
 - c. Other, Please Specify _____
10. How often are pre-fire plans used during emergency responses?
 - a. Always
 - b. Usually
 - c. Occasionally
 - d. Never

Appendix D

	Business Name	Address	Zone
1	Aveva Drug Delivery #1	3250 S Commerce Pkwy	70
2	Aveva Drug Delivery #2	3280 S Executive Way	70
3	Altor Bio Science #1	2810 N Commerce Pkwy	70
4	Altor Bio Science #2	2929 N Commerce Pkwy	70
5	J.L. Audio	10321 N Commerce Pkwy	70
6	Miramar Professional Center	8910 Miramar Parkway	70
7	Delta Apparels	11500 Miramar Parkway	70
8	Sam's Club	1900 S. University Drive	70
9	Quest Diagnostics	10200 S Commerce Pkwy	70
10	Walmart Store #1511	1800 S. University Drive	70
11	Florida Blood Center - Miramar	7901 Riviera Blvd	19
12	Chemical & Supply Distributors	11301 N. Interchange Circle	70
13	The Documet Bank	7801 Riviera Blvd	19
14	Premier Beverage	9801 Premier Parkway	70
15	Continental Pool Supply	2825 SW 64 Avenue	19
16	Miramar West Water Plant	4100 Flamingo Road	84
17	Miramar East Water Plant	2620 SW 66 Terrace	19
18	Broward Water Plant	3004 SW 67 Way	19
19	Vet Brand	10467 N. Commerce Parkway	70
20	Super Target Storae # 1512	16901 Miramar Parkway	100
21	Hampton Inn Hotel	10990 Marks Way	70
22	Hilton Garden Inn Hotel	14501 SW 29 Street (Hotel Rd)	84
23	Courtyard Marriott Hotel	14500 SW 29 Street (Hotel Rd)	84
24	Residence Inn Mariott Hotel	14700 SW 29 Street (Hotel Rd)	84
25	Windgate Inn Hotel	2800 Sw 149 Avenue	84
26	Space Coast Credit Union	3700 Lakeside Drive	84
27	Comprehesive Phase One	3400 Enterprise Way	70
28	Coasters Company of America	10700 Enterprise Way	70
29	Caremark Pharmacy	15800 SW 25 Street	84
30	Safeguard Self-Storage	7850 Riviera Blvd	19
31	United Self-Storage	2801 SW 160 Avenye (Dykes Rd)	84
32	Storage Mart	3500 SW 160 Avenue	100
33	Miramar Sel-Storage	11800 Miarmar Parkway	70
34	Tropical Self-Storage	14751 SW 29 Street (Hotel Rd)	84
35	Miramar Centre Bldg A	3401 SW 160 Avenue	84

36	Humana Building Bldg B	3501 SW 160 Avenue	84
37	Miramar Centre Bldg C	3601 SW 160 Avenue	84
38	Veneto Bldg North	3600 Red Road	70
39	CH Robinson Worlwide	11600 Miramar Parkway	70
40	America Tires	11700 Miramar Parkway	70
41	Sherwin-Williams Paint #2644	11820 Miramar Pkwy #S5 & S6	70
42	FBI Special Events Bay	11820 Miramar Pkwy #Bay 1	70
43	Bio-Resource Tech	11918/24 Miramar Parkway	70
44	Ely's Tires	3920 S. State Rd 7	19
45	Imaging Medical Solutions	11920 Miramar Parkway	70
46	Federal Aviation Agency (FAA)	2895 SW 145 Avenue	84
47	Immigration Custom Enforcement (ICE)	2805 SW 145 Avenue	84
48	Edward Don and Company	11500 Miramar Parkway	70
49	Kellstrom Industries	3701 Flamingo Road	70
50	Suricare of Miramar 3rd Floor	14601 SW 29 Street (Hotel Rd)	84
51	Propulsion Technolgoy Systems	15301 SW 29 Srteet	84
52	ZF Marine Propulsion System	15351 SW 29 Street	84
53	Memorial Hospital - Miramar	1901 SW 172 Avenue	100
54	Memorial Hospital - MOB	1951 SW 172 Avenue	100
55	Home Depot #6353	3183 SW 160 Avenue	84
56	L'Oreal Parbel of Florida	2650 SW 145 Avenue	84
57	Emergency Response Team (FBI)	12024-26 Miramar Parkway	70
58	ATF	12052 Miramar Parkway	70
59	K & S Pool Supply	6855 Miramar Parkway	19
60	Crescent Pool Supply	2310 South State Road 7	19